Discussion Note

Dr. Hoseok Kim, Chair, National Sustainability Research Group, KEI

Navigating the Future: Climate Macroeconomics, Transition Finance, and the Rise of Green Digital Finance in Japan and Asia

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Climate change: A global imperative

- In September 2023, world leaders convened at the UN HQ for the SDG Summit, dedicating their discussions to accelerating the implementation of the 2030 Agenda for Sustainable Development.
- The summit highlighted climate change as a critical challenge alongside armed conflict and the repercussions of the COVID-19 pandemic.
- Today, climate change is recognized not merely as an environmental issue but as a significant threat encompassing economic, societal, and environmental dimensions.

Macroeconomic Impact of Climate Change

- Climate change presents a major threat to long-term growth and prosperity. It profoundly influences the economy, reshaping fundamental macroeconomic aggregates.
- The macroeconomic impact of climate change is increasingly systemic due to higher public and private investments in climate mitigation and adaptation.
- This systemic impact triggers changes in consumer, producer, and government behavior, leading to lasting economic effects and alterations in macroeconomic variables like consumption, investment, government spending, and overall output.

Financial sector's response to climate change

The financial sector has a critical role in addressing these challenges through several key actions:

A. Refining Policy Variables: Integrate climate risk evaluations into monetary policies and update financial regulations to reflect climate change implications.

B. Encouraging Sustainable Finance: Channel capital into environmentally sustainable ventures.

C. Developing Innovative Financial Products: Support the development of new financial products like green digital financial products to bolster market efficiency and accessibility.

A. Figuring out climate-related macroeconomic risks

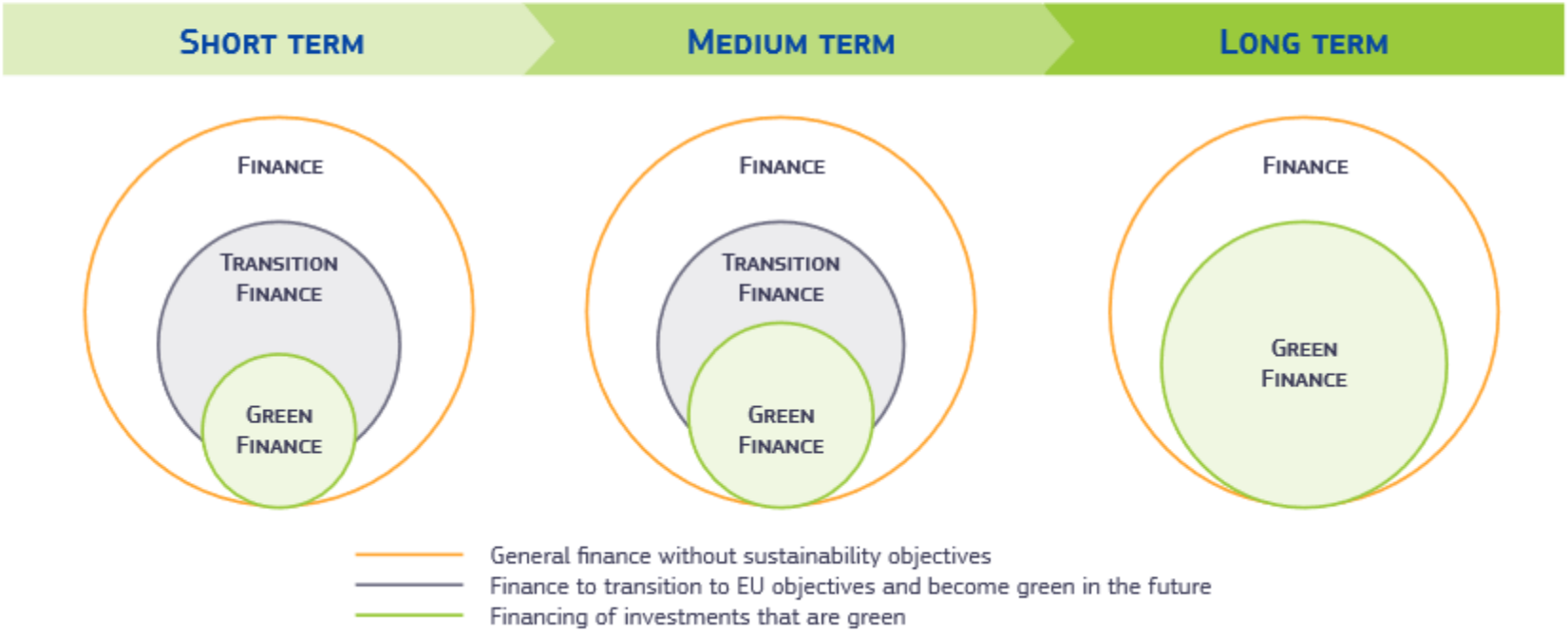
- To effectively refine macroeconomic policy variables, it is crucial to ascertain the potential macroeconomic impacts of climate change and related vulnerabilities.
- Professor Seong-Hoon Kim's insightful analytical approach unravels these potential impacts on a real-world economy.
  - His examination delves into how extreme weather events can simultaneously operate as adverse supply shocks and favorable demand shocks, thereby influencing economic output and inflation in complex ways.
- These insights are vital to refining policy variables and fostering informed policy-making, essential for the ASEAN+3 region and beyond.

B. Channeling capital into climate projects

- The financial system is currently harnessing the growth of sustainable finance, pivotal for climate change mitigation.
- Aiming for the Net Zero Target by 2050, transition finance serves as a bridge, facilitating the shift from traditional investment to sustainable avenues, thereby supporting green projects essential for zero-emission goals.
- Mr. Takada's presentation highlights crucial elements and initiatives bolstering transition finance, marking a significant step in sustainable development.

INVESTING IN THE TRANSITION

Sustainable finance is about financing both what is already environment-friendly today (green finance) and the transition to environment-friendly performance levels over time (transition finance).



(From European Commission, 2023)

C. Developing innovative financial products

- Climate projects often entail more complex information than conventional projects, which could slow the growth of sustainable finance without proper tools to manage this complexity.
- Green Digital Finance Advantages:
  - Reduce transaction costs.
  - Improve the transparency of green project information.
  - Encourage participation from consumers and investors with environmental, social, and governance (ESG) preferences
- Tokenization of tradable permits enhances liquidity in the green asset market, attracting a wider range of consumers and investors interested in environmental investments.

Integrating ETS with sustainability bonds (Hoseok Kim, 2024)

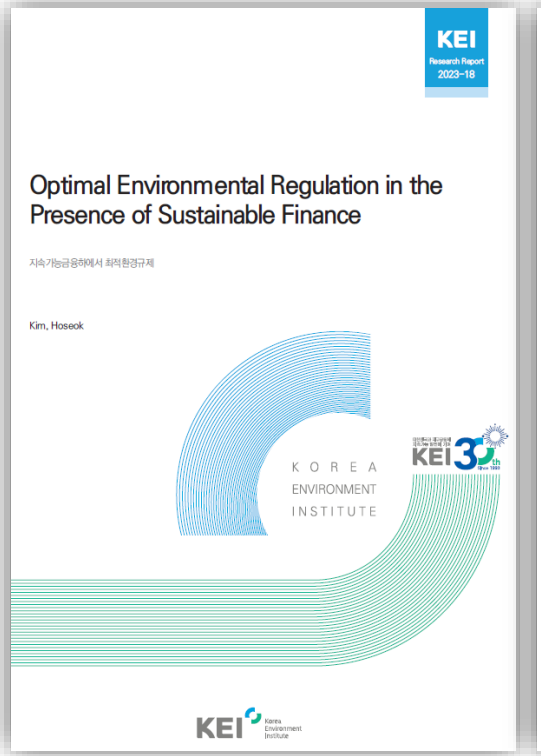
- Innovative Approach: **Permit Offsetting for Sustainability Compliance**
  - Corporations or governments issue bonds to finance projects with either targeted GHG Reductions or minimum Zero-Emission Requirements.
  - Integrating ETS with Sustainability Bonds: If projects underperform, issuers can offset the shortfall with ETS permits, ensuring adherence to emissions targets.
- Benefits: Transition Projects Facilitation
  - This approach opens avenues for financing 'transition' projects that offer substantial sustainability advantages yet may not meet strict 'green' criteria.
  - Strategically integrating sustainability bonds with ETS compliance mechanisms offers a powerful tool to bolster ETS markets and broaden the scope of sustainable financing.

Integrating ETS with sustainability bonds (Hoseok Kim, 2024)

- Caveat:
  - If an ETS covers only select sectors of the economy, it could limit the supply of permits available to businesses within those sectors.
  - This likely leads to a higher equilibrium price for permits, increasing the cost of emissions and encouraging entities under regulation to enhance their efforts in reducing GHG emissions.
- Solution:
  - It may restrict the Permit Offsetting for Sustainability Compliance mechanism to sectors already covered by ETS.
  - This ensures a balanced approach to achieving the bonds' sustainability goals and maintaining the integrity of the permit market.

Integrating ETS with sustainability bonds (Hoseok Kim, 2024)

- How can the optimal quantity of tradable permits be established in the context of sustainable finance?"



Impact of sustainable finance on emissions

The optimal level of emission under sustainable finance, e_1, is derived by multiplying the optimal investment level z_1 with $(1-g)$:

$$e_1 = (1-g)\frac{\omega - \alpha(g-\bar{g}) + \tau^*(1-g) - \theta p - \theta\gamma(g-\bar{g})}{\theta^2 p'}$$

The difference $e_1 - e^*$ illustrates the effect of sustainable finance on the firm's emission decisions in comparison to traditional finance:

$$e_1 - e^* = (1-g)\left(\frac{-\alpha(g-\bar{g}) - \theta\gamma(g-\bar{g})}{\theta^2 p'}\right)$$

- For firms where $g > \bar{g}$ (greener than the benchmark): Here, $\alpha(g-\bar{g})$ is positive. Since p' is negative, this leads to an increase in e_1 compared to e^*, as the negative terms in the numerator reduce the absolute value of the fraction. Therefore, $e_1 - e^*$ is positive, indicating an increase in emissions under sustainable finance for greener firms. This increase is attributed to the greater scale of production and use of inputs incentivized by sustainable finance.
- For firms where $g < \bar{g}$ (less green than the benchmark): In this scenario, $\alpha(g-\bar{g})$ is negative, which decreases the value of e_1 compared to e^*. As a result, $e_1 - e^*$ is negative, implying a reduction in emissions under sustainable finance for less green firms. This is due to the increased cost burden, leading to reduced production and input use.

The sign of $e_1 - e^*$ is positive for greener firms $(g > \bar{g})$ and negative for less green firms $(g < \bar{g})$. This outcome highlights the complex impact of sustainable finance on emissions, which are dependent on a firm's environmental performance relative to the industry benchmark.

Thank you